

Karuk Traditional Ecological Knowledge and the Need for Knowledge Sovereignty:



Social, Cultural and Economic Impacts of Denied Access to Traditional Management

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***Karuk Traditional Ecological Knowledge and the Need for
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Traditional Management.***

Karuk management principles have been central to the evolution of the flora and fauna of the mid-Klamath ecosystem (Andersen 2005, Lake et al 2010, Skinner et al 2006). Ongoing and future climate change intensifies existing ecological pressures in the Klamath Basin and on Karuk traditional foods and cultural use species already under threat. Future climate scenarios for the Klamath Basin point to unique threats to both riverine and “upslope” species, as shifting and increasingly variable precipitation patterns impact stream flows, stream temperatures and fire regimes (Karl et al 2009). Climate change poses a threat not only to the Klamath ecosystem, but to Karuk culture which is intimately intertwined with the presence, use and management of cultural use species (Karuk Tribe 2010, Lake et al 2010, Norgaard 2005). In the context of climate change, Karuk tribal knowledge and management principles can be utilized to protect public as well as tribal trust¹ resources (Karuk Tribe 2012).

For Tribes within the North Pacific Landscape Conservation Cooperative such as the Karuk where significant knowledge of traditional management practices is intact, but where all or part of ancestral lands are managed by other agencies, it is important that the implementation of traditional management take place in a manner that promotes rather than hinders tribal sovereignty and the Federal tribal trust responsibility. In this context, the most immediate barrier to the wider employment of Karuk traditional management and sharing of Karuk TEK is not knowledge itself, but understanding of how to communicate traditional TEK and expand traditional management in a manner that simultaneously promotes knowledge sovereignty, Tribal self-determination and Tribal self-governance.

This report is Part I of a two part series produced under the North Pacific Landscape Conservation Cooperative Tribal Climate Change initiative on Knowledge Sovereignty. This report situates Karuk traditional knowledge in the practice of cultural management, indicating how Karuk knowledge cannot be separated from

¹ Tribal trust is “a principle that arises from the Native relinquishment of land in reliance on federal assurances that retained lands and resources would be protected for future generations. It bears rough analogy to nuisance and trespass law. Ownership of land carries corollary rights of government protection-the right to seek judicial redress against harm to property. The Indian trust responsibility is protection for property guaranteed on the sovereign level, from the federal government to tribes” (see Wood, 2003).

either the practices that generated the information, or the practices that emerge from it. While non-Native agency practitioners and western scientists have assumed that this “knowledge” of how to burn the forest or how to manage the fisheries can be described by Karuk people, shared in various agency processes and then applied by multiple actors in different contexts. Underlying this assumption are two very different understandings about the nature of knowledge. While the non-Native world sees “people” as separate from “nature,” and “knowledge” as an abstraction that can be transferred across generic landscapes or multiple “users,” Karuk knowledge of the landscape is inseparable from the practice of Karuk culture. For Karuk knowledge is embedded in and emerges from the practice of traditional management. Knowledge and management are about culture. Part of understanding why knowledge cannot be readily “picked up and used” by other agencies has to do with the nature of indigenous knowledge not as a static, one size fits all rulebook or recipe book for actions on the landscape, but rather how that knowledge is generated through an ongoing process that involves not only observations and actions over time, but moral and spiritual components as well as ‘social license’ of knowledge practitioners. Thus traditional knowledge is fundamentally part of management, and management is centrally about Karuk culture, identity, spirituality and mental and physical health.

Yet although knowledge cannot be transferred in the manner many non-Native managers presume, there are many ways that the use and application of Karuk traditional knowledge can be expanded that will strengthen tribal culture and enhance sovereignty. Part II of this series “Retaining Knowledge Sovereignty: Expanding the Application of Tribal Traditional Knowledge on Forest Lands in the Face of Climate Change” will detail mechanisms through which knowledge (and culture) have been inappropriately engaged in the past and provide a road map of proactive actions.

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May the Karuk and all Tribal People achieve the full sovereignty over their knowledge, lands and spiritual practices.

Table of Contents

Introduction:
***Karuk Traditional Knowledge, Climate Change and Knowledge Sovereignty* 7**

Chapter One:
***“Management is Culture:” Traditional Ecological Knowledge and the Practice of Traditional Management* 12**

- *Karuk Practices of Caring for the Land: Tending, Burning, Ceremony*
- *Western Science and Traditional Knowledge As Distinct Cosmologies*
- *Management Is Culture: The Integration of Ecological, Economic, Cultural and Health Outcomes of Traditional Management*

Chapter Two:
***“Its Illegal to be a Karuk Indian in the 21st Century”* 23**

- *Historical Influences on Loss of Knowledge Sovereignty and Traditional Management: Genocide and Forced Assimilation*
- *Criminalization and Restriction of Management Activities Today*

Chapter Three:
***Impacts to Social Networks and Subsistence Economy* 29**

- *Food and Hunger*
- *Subsistence Activity as Social Capital and Social “Glue”*

Chapter Four
***Knowledge Sovereignty, Traditional Management and Physical Health* 38**

- *Healthy Foods and Physical Health*

Chapter Five
***Mental Health Impacts of Denied Access to Management and Culture* 41**

- *Social Causes of Psychological Stress*

- *Environmental Decline and Mental Health*
- *Individual Mental Health: Self-Efficacy, Power and Identity*
- *Role Strain and Role Stress*
- *Mental Health Stressors are Both Individual and Community Wide*
- *Association of Environmental Degradation and Denied Access to Management With Genocide.*

***Bibliography* 54**

Introduction: Karuk Traditional Ecological Knowledge, Climate Change and Knowledge Sovereignty

"We are trying to get back to an intact world. Climate change can be a vehicle for that because of the awareness it brings to so many about limitations in the current management practices. We believe there is genuine interest in Karuk perspectives about how to care for the land, we offer these explanations in the hopes that this is true."

- Ron Reed

Traditional ecological knowledge involves "relationships between "knowledge, people, and all Creation (the 'natural' world as well as the spiritual)...TEK is viewed as the process of participating (a verb) fully and responsibly in such relationships, rather than specifically as the knowledge gained from such experiences. For Aboriginal people, TEK is not just about understanding relationships, it is the relationship with Creation. TEK is something one does"

- Deborah McGregor 2008, 145-146.

The Klamath River region of Northern California and Central Oregon is a highly diverse ecosystem (Whittaker 1960, Kruckeberg 1984, DellaSala 1999). The diversity of particular traditional and cultural use species flourished in conjunction with sophisticated Karuk land management practices, including the regulation of the fisheries through ceremony and the management of the forest through fire (Kimmerer and Lake 2001, Lake, Tripp and Reed 2010, Salter 2003, Andersen 2005). One component of this system is the knowledge of particular species and ecological conditions, as well as the knowledge of how to reproduce them. Despite its central importance for both ecosystem and community well being, Karuk traditional knowledge is at risk of decline due to factors ranging from the dynamics of forced assimilation and lack of acknowledgement by the non-Native land management agencies, to insufficient tribal management capacity and even the extent of ecological changes in ecosystems themselves.

Over the past twenty years, but especially in the last ten years many benefits of traditional ecological knowledge and management have been acknowledged and

recognized by Western scientists and practitioners. These include the fact that Native management practices allow for multi-species management, landscape patchiness, and the abundance of important species (see e.g. McGregor 2008, Whyte 2013, Williams and Hardison 2013, Smith and Sharp 2012). Now in the face of the ecological threat of climate change there has been a heightened understanding of the value of indigenous “traditional ecological knowledge” by Western science practitioners, academic institutions and Federal and State land management agencies (see e.g. Leonetti, 2010, Ross et al 2010, Whyte, 2013, Agrawal 2002). Climate change has also brought an awareness of the urgent need for cooperative management across agencies. This renewed interest in the importance of Karuk TEK and management approaches can be valuable and positive for the Karuk tribe, but only if non-Indian agencies understand the terrain at hand. For Tribes within the North Pacific Landscape Conservation Cooperative such as the Karuk where significant knowledge of traditional management practices is intact, but where primary management authority for all or part of ancestral lands is held by other agencies, it is important that the implementation of management take place in a manner that promotes rather than hinders tribal sovereignty and tribal trust. For example, there have been instances in which the US Forest Service and other agencies have employed or attempted to employ management techniques derived from Karuk management (e.g. concerning prescribed burning), but these efforts have been carried out improperly and without proper credit to the Tribe. In other cases the lack of clear protections and process regarding tribal knowledge has inadvertently resulted in cultural appropriation. In this context, the most immediate barrier to the wider employment of Karuk traditional management and sharing of Karuk TEK is public understanding about the nature of traditional knowledge so that its use can be expanded in a manner that simultaneously promotes knowledge sovereignty, Tribal self-determination and Tribal self-governance. This document is offered in the hope of opening up a space for more successful cross-cultural collaboration and management in the face of climate change.

Climate change is the most serious ecological problem our world has faced. Climate change evokes an urgent need to rethink many aspects of western social,

economic and political systems from the organization of energy around fossil fuels, to the sustainability of cultural values of excessive consumption, and the relevance of epistemologies that presume a separation of the social and natural worlds. Western land management practices from fire suppression to single species management and extractive emphases have also been called into question. In this moment of crisis new possibilities for cooperation across worldviews, scales and jurisdictions have emerged. Agencies are trying to work together to think about climate change – a problem that does not follow bureaucratic lines. Government agencies, the western scientific community and non-profit land managers alike have begun to point to the importance of returning to traditional management practices (Leonetti 2010).

As Western land managers have begun to realize limitations in the land management systems they have imposed and to appreciate the legitimacy of Native knowledge systems, there has been interest in integrating or adopting indigenous “TEK.” However Karuk traditional knowledge cannot be separated from either the practices that generated the knowledge, or the practices that emerge from it. These practices, known as “traditional management” are in turn centrally about Karuk culture, identity, spirituality and mental and physical health. While non-Native interest in Karuk knowledge may be a strategic positive opportunity for expanding of Native practices in the landscape, recent experiences make clear that this outcome is not a given. At this juncture it is important that the Karuk Tribe retain sovereignty over TEK, not only for tribal interests, but to attain the ecological outcomes desired by all.

This report is Part One of a two part series produced under the NPLCC Tribal Climate Change initiative on Knowledge Sovereignty. The continuing loss of Karuk knowledge has both serious ecological consequences, and grave consequences for Karuk culture, social systems and political sovereignty. The purpose of this report is to outline the **connection of tribal knowledge to cultural practices** and thus the importance of Karuk **sovereignty** over traditional ecological knowledge in this new terrain. Part Two of this series “Retaining Knowledge Sovereignty: Expanding the Application of Tribal Traditional Knowledge on Forest Lands in the Face of Climate

Change” will detail the mechanisms through which knowledge (and culture) have been extracted, and most importantly, to provide a road map of what can be done.

Report Overview:

Chapter One of this Social Impact Assessment describes Karuk Traditional knowledge as a system of practices that are ongoing in the landscape. This chapter begins with examples of the scope of management activities that Karuk people have conducted in the mid-Klamath region, giving examples of particular species that are managed and utilized. Part of understanding why knowledge cannot be readily “picked up and used” by other agencies has to do with the nature of the knowledge not as a static, one size fits all rulebook or recipe book for actions on the landscape, but rather how that knowledge is generated through an ongoing process that involves not only observations and actions over time, but moral and spiritual components as well as the ‘social license’ of knowledge practitioners. The practices that generate Karuk traditional knowledge are organized around the economic, cultural, social needs of particular communities, which in turn create accountability as a mechanism underscoring its ultimate sustainability. Attempts to extract knowledge are a form of cultural appropriation that erodes the very foundations of Tribal life as much of this report will describe.² Knowledge cannot be transferred in a manner that many non-Tribal managers are accustomed to. However, there are culturally-appropriate ways that the use and application of Karuk and other Tribal traditional knowledge can be shared to strengthen Tribal culture, enhance sovereignty, and provide benefits to ecosystems and non-Tribal communities alike.

² We recommend further reading of the excellent and detailed literature on the central role of Western science in the project of colonialism and the corresponding ethical risks Native communities face (Bannister and Hardison 2006, Hansen and Van FLeed 2003, Hardison and Bannister 2011, Hill et al 2010, Janke 2009, Williams and Hardison 2013, Colorado and Collins 1987, Agrawal 2002, Briggs and Sharp 2004, Briggs 2005, Green 2004, Heckler 2012, Nadasdy 2003, Ellen, Parkes and Bicker 2000, Watson-Verran and Turnball 1995, Wildcat 2009), the ethical risks for Tribes from engaging in research with non-Native entities (Baldy 2013, Williams and Hardison 2013, Hill et al 2010, Hardison and Bannister 2011, Hansen and Van FLeed 2003, Bannister and Hardison 2006) and unfortunately, the ongoing ways that the extraction of Tribal knowledge perpetuates cultural genocide today (see also Norgaard 2014 for more detail specific to Karuk land management struggles).

These are discussed at length in the second report. Chapter One will also introduce the multiple social, economic, and health benefits that come to the Karuk community from participation in the process of traditional knowledge generation and its application through management.

Both the legitimacy of and practical ability of Karuk people to carry out traditional knowledge, management practices and culture on the Klamath have been contested by the arrival of non-Native peoples. As background to communicating the importance of knowledge sovereignty for the Karuk Tribe today, Chapter Two provides a brief history of the extent to which knowledge systems and activities have been misunderstood, contested and criminalized both historically and in the present day. One centrally important aspect of denied access to traditional knowledge and management has been the disruption of the once phenomenally abundant Karuk subsistence economy. For most people in the United States food security is related to income and monetary wealth. In the Karuk community a high percentage of families living in aboriginal territory continue to rely directly on the land for a meaningful portion of their food. Chapter Three describes the critical importance of traditional management and knowledge for subsistence economic activity, how these activities generate social capital to individual players, enhance social networks and form a type of “social glue” for the community. The chapter provides data on hunger and food security and describes the economic impacts of the criminalization of traditional management activities.

Karuk traditional knowledge and management also underscore physical health. Chapter Four builds on material from the “Altered Diet report” (Norgaard 2004) to describe physical health effects from the denied access to foods and reduced exercise. Just as physical health is embedded in both ecosystem health and cultural activities for Karuk people, so too is mental health. There are multiple important ways that the loss of knowledge sovereignty and management ability negatively affects the mental health of individuals. Chapter Five details these mental health impacts of the reduced ability to carry out culture including environmental decline, threats to identity, role stress, and sense of self-efficacy, loss of meaning systems and an underlying and ongoing sense of genocide.

Chapter One: Management Is Culture Traditional Ecological Knowledge and Traditional Management

The exceptional biological diversity of the Klamath River region Northern California and Southern Oregon has emerged in conjunction with sophisticated Karuk land management practices, including the regulation of the fisheries through ceremony and the management of the forest through fire. Together Karuk traditional ecological knowledge and management practices have created the ecological system of the middle Klamath region as it exists today (Karuk Tribe ECRMP 2012, Hillman and Salter 1997, Andersen 2006). Karuk practices of tending, burning, and harvesting have fundamentally shaped species abundance and diversity. Furthermore, the practice of traditional management and knowledge are themselves essential expressions of Karuk culture. Traditional knowledge organizes a system of caring for and responding to the natural world that has been ongoing on the mid-Klamath since time immemorial. Indeed, the species abundance and diversity of this region cannot be understood outside the Karuk knowledge and management activities that produced them (Agee and Skinner 2005, Andersen, 2002). This chapter begins with descriptions of some management activities that Karuk people have conducted in the mid-Klamath region, giving examples of both particular species that are managed and utilized, as well as a range of the kinds of activities that constitute traditional management.

Karuk Practices of Caring for the Land: Tending, Burning, Ceremony

Indigenous peoples have been pigeonholed by social scientists into one of two categories, "Hunter-gatherer" or "agriculturalist," obscuring the ancient role of many indigenous peoples as wildland managers and limiting their use of and impacts on nature to the two extremes of human intervention. The images evoked by the term hunter-gatherer is of a wanderer or nomad, plucking berries and pinching greens and living a hand-to-mouth existence; agriculturalist, at the other extreme,

refers to one who completely transforms wildland environments, saves and sows seed, and clears engulfing vegetation by means of fire and hand weeding. This dichotomous view of nature-human interactions has shut out the fact that Indian groups across California practiced many diverse approaches to land use, and it has led to a focus on domestication as the only way humans can influence plants and animals and shape natural environments.

Kat Andersen, Tending the Wild, 2006, p. 125

Although this third model of “wildland managers” located between “hunter-gatherer” and “agriculturalist” is now generally understood, the full implications of the notion that people have “tended” California landscapes for a long time remains difficult for non-Indian academics or natural resource practitioners to grasp. From a practical standpoint, this knowledge makes clear that rather than the concept of an “untouched” wilderness that European settlers had assumed, California landscapes were more akin to carefully tended gardens. What natural scientists have described as “nature” and “natural history” is in fact a human-natural history. For example, fire records in California clearly indicates that Native land management systems have significantly shaped the evolutionary course of plant species and communities for at least twelve thousand years for which there are records. Traditional management through fire has influenced the size, extent, pattern, structure and composition of the flora and fauna of numerous vegetation types throughout the state (Andersen, 2006).

In the mid-Klamath region, the distribution and abundance of species has been fundamentally shaped by the Karuk use of fire. Skinner et al. (2006) write that “Native people of the Klamath Mountains used fire in many ways: (1) to promote production of plants for food (e.g., acorns, berries, roots) and fiber (e.g., basket materials); (2) for ceremonial purposes; and (3) to improve hunting conditions” (176). The Karuk Tribe Draft Eco-Cultural Resources Management Plan notes that “Fire caused by natural and human ignitions affects the distribution, abundance, composition, structure and morphology of trees, shrubs, forbs, and grasses” (4, 2010). People burned to facilitate forest quality for food species like elk, deer, acorns, mushrooms, and lilies. They burned for basketry materials such as hazel and

willow, and also to keep open travel routes. Karuk people managed for their own foods and uses, but their activities created abundance that benefited other species on their own terms. In the words of Dr. Frank Lake Karuk Descendant and USDA Forest Service research ecologist, in describing what he was taught and learned of Karuk culture: “as a human, you have a caretaking responsibility. And so you managed areas to share acorns, to share mushrooms, to share berries to share grass seeds.”

Although the impact of fire on the ecology of forest species are most immediately apparent, burning also affects inputs to riparian systems. The Karuk Draft Eco-Cultural Management Plan outlines how “Certain trees and shrubs utilize water more than others, fire affects this relationship (Fiteset et al. 2006). The distribution of forests, shrubs, and grasslands, affects the process of infiltration from precipitation and resultant levels of evaporation with how those plants utilized water (DeBano et al. 1998). The balance of water in and water out, leading to the amount of moisture in the soil and the quantity and quality of springs is influenced by fire (Biswell 1999:157).” Karuk fisheries biologist and spiritual leader Kenneth Brink describes this relationship:

We did our fire management, which enabled to put more water into the tribs (tributaries), say like on a drought year, you take all your understory out, like all these blackberries and stuff would never be here. These alders would not be all big. There might be one or two big ones making a shade instead on all these little suckers. I mean, you didn't see the alder, and didn't see willow trees, you saw willow brush. I mean a lot of this foliage takes up a lot of water.

In the mid-Klamath the practice of burning created good conditions for the growth of many important Karuk food and cultural use species, from Tan Oaks, huckleberries and Manzanita to deer, elk and mushroom species, see Figure 1 below. Over three quarters of Karuk traditional food and cultural use species are enhanced by fire (Personal communication, Tripp 2013 intergenerational TEK). Furthermore, forest stands that had been burned were open enough for people to access them in order to gather. As Karuk Eco-Cultural Restoration Specialist and spiritual leader Bill Tripp describes

They used to roll logs off the top of Offield Mountain as part of the World Renewal Ceremony in September, right in the height of fire season so that whole mountain was in a condition to where it wouldn't burn hot. It would burn around to some rocky areas and go out. It would burn slow. Creep down the hill over a matter of days until it just finally went out. When it rained it would go out and that's what we wanted it to do.

Figure 1 Some Important Karuk Forest Foods Enhanced by Fire

Black Tail Deer	púufich	Odocoileus hemionus
Roosevelt Elk	íshyuux	Cervus occidentalis
Squirrel (Western Grey)	áxruih	Sciurus griseus
Tan Oak	xunyêep	Lithocarups densiflorus
Dwarf Tan Oak	xunyêep	L. densiflora
Hazel	athithxuntápan	Corylus cornuta
White Oak	axvêep	Quercus garryanna
Canyon Oak	xanpútíp	Q. chrysolepis
Black Oak	xánthiip	Q. kelloggii
Evergreen huckleberry	púrith	V. ovatum
Tan Oak Mushroom	xayviish	Tricholoma magnivelare

Not only has the longstanding record of indigenous management in California now been corroborated by Western Science, academics and historians alike concur as to the extraordinary effectiveness of these systems:

No country in the world was as well supplied by Nature, with food for man, as California, when first discovered by the Spaniards. Every one of its early visitors has left records to this effect – they all found its hills, valleys and plains filled with elk, deer, hares, rabbits, quail and other animals fit for food; its rivers and lakes swarming with salmon, trout, and other fish, their beds and banks covered with mussels, clams, and other edible mollusca; the rocks on its sea shores crowded with seal and otter; and its forests full of trees and plants, bearing acorns, nuts, seeds and berries.

Titus Fey Cronise, The Natural Wealth of California, 1868 cited in Andersen Tending the Wild, 2005, p. 15

This profound ecological abundance was created through coordinated management between forest and fisheries, and amongst multiple tribal communities. Karuk people and their neighbors had the technology to overexploit the resource (e.g. in the form of weirs), but chose not to. For example, on the Klamath through coordinated ceremonial regulation and custom, tribal fishery management for centuries sustained an annual harvest of salmon equal to the peak of the harvest achieved by white settlers in only one year (House 1999; McEvoy 1986: 23). Under tribal management weirs were built by Karuk at Red Cap Creek and by Yurok further down the Klamath River below Pecwan, but no one began harvesting fish until a priest and his assistants performed a 10-day ceremony to catch the first salmon of the year at Ameekyáaraam. According to Karuk Ceremonial Leader and Director of the Department of Natural Resources Leaf Hillman, “Because the first fish [was] caught at Ameekyáaraam, they say the ‘fish medicine’ was made there.” After the first fish was caught, it was not consumed, but was ceremoniously offered on an altar. Only after this ceremony was completed were the Tribes along the mid and lower Klamath River permitted to fish. According to Hillman, the, “ceremony is the respect, up and down the river, for that system of management that allows for...adequate spawning or escapement...meeting the needs of the resource first, prior to thinking about the needs of your own folks.” A similar ritual took place for the Fall Chinook run.

Rituals such as these fused together both religious meaning and economic practice. They limited harvests so all tribes were able to depend on salmon as a primary food source. The survival of the salmon and the people were phenomena that mutually reinforced the ideological premise for this system, since, if the salmon kept returning in bountiful numbers, then reverence to the salmon (as seen in the practice of limiting the harvest of salmon so they can reproduce) was rewarded.³

Unfortunately the invasion of Karuk territory by non-Native settlers disrupted these ceremonies and cultural systems. In addition, the exclusion of fire began as official policy in the early 1900s with the establishment of the U.S. Forest

³ Such sustainable ecological systems are not unique to the Karuk. See e.g. Trospen 1995, Trospen 2002.

Service as the official land manager of the region, and increased in intensity during the period following World War II. Studies of the Klamath mountain region note “two periods with distinctly different fire regimes: (1) the Native American period, which usually includes both the pre-historic and European settlement period, and (2) the fire suppression period” (Skinner et al 2006, 176). The authors also note that

Over the 400 years prior to effective fire suppression, there are no comparable fire-free periods when large landscapes experienced decades without fires simultaneously across the bioregion (Agee 1991; Wills and Stuart 1994; Taylor and Skinner 1998, 2003; Stuart and Salazar 2000; Skinner 2003a, 2003b). Along with these changes in the fire regimes are changes in landscape vegetation patterns. Before fire suppression, fires of higher spatial complexity created openings of variable size within a matrix of forest that was generally more open than today (Taylor and Skinner 1998). This heterogeneous pattern has been replaced by a more homogenous pattern of smaller openings in a matrix of denser forests (Skinner 1995a). Thus, spatial complexity has been reduced (178-179).

Across the Western United States a similar pattern of altered ecology in the absence of traditional management occurs. As noted in the 2012 Final Report of Phase II of the Wildland Fire Cohesive Management Strategy

“Practices such as pruning, burning and coppicing at regular intervals once contributed significantly to historic landscape resiliency and community livelihood. Access to abundant and quality hunting, fishing, and gathering areas as well as other traditional, ceremonial, or religious fire use factors have experienced significant decline following fire exclusion” (USDA, 2012, 30).

Western Science and Traditional Knowledge As Distinct Cosmologies

Today there is a new and unique opportunity in the emergent interest in the use and application of traditional Karuk knowledge by Western scientists and non-Native land management agencies. For Tribes within the North Pacific Landscape Conservation Cooperative such as the Karuk where significant knowledge of traditional management practices is intact, but where all or part of ancestral lands are managed by other agencies, it is important that the implementation of management take place in a manner that promotes rather than hinders tribal

sovereignty and tribal trust. In the past there have been instances in which the USFS and other agencies have employed or attempted to employ management techniques derived from Karuk management (e.g. concerning prescribed burning), but these efforts have been carried out improperly and without proper credit to the Tribe.

Leaf Hillman describes the frustration of these different perspectives:

“You do a paper on TEK and we talk about specific practices, you write them down on a piece of paper and then the Forest Service thinks that they can take that. “Okay, we paid for this under a contract for you guys to develop this, so now we are going to take this and apply it.” Just the notion that they can apply those things, within their structure -- within the boxes that they have -- as if they just knew what they were. “Tell us what they are, and if you describe them well enough then we can apply those things.” But they can’t just apply those concepts, because what they require is cultural practices of a land-based people. They must be used by people who are on the land, not people who are separate from the land as part of a government agency. Government agencies still don’t see themselves as part of the land. They don’t see themselves that way, and they shouldn’t see themselves that way because they are not!”

In other cases the lack of clear protections and process regarding tribal knowledge has inadvertently resulted in cultural appropriation.⁴

The very concept of “traditional ecological knowledge” as a stand-alone phrase implies that Karuk “knowledge” is a discrete entity. The Western scientific cosmology presumes that the world can be categorized into “facts,” that knowledge exists in the abstract outside particular contexts, and observers are interchangeable. However the kind of knowledge that has co-created the mid-Klamath ecosystem of today, is situated and embedded in specific ecological and cultural context. Thus, agency practitioners and western scientists have assumed that this “knowledge” of how to burn the forest or how to manage the fisheries can be described by Karuk people, shared in various agency processes and then applied by multiple actors in

⁴ Note that ethically speaking, appropriation of knowledge, even in cases where one party gains and the other party is not foreseeably harmed is still a form of exploitation. This is so because the party that remains the same has not consented to someone's using something of theirs for their own benefit. This is clearly established in the recently published Federal Guidelines on Traditional Knowledges guidelines acknowledged by DOI: <http://climatetkw.wordpress.com/>

different contexts. Underlying this assumption are two very different understandings about the nature of knowledge. While the non-Native world sees “people” as separate from “nature,” and “knowledge” as an abstraction that can be transferred across generic landscapes or multiple “users,” Karuk knowledge of the landscape is inseparable from the practice of Karuk culture. For Karuk knowledge is embedded in and emerges from the practice of traditional management. Knowledge and management are about culture. Part of understanding why knowledge cannot be readily “picked up and used” by other agencies has to do with the nature of indigenous knowledge not as a static, one size fits all rulebook or recipe book for actions on the landscape, but rather how that knowledge is generated through an ongoing process that involves not only observations and actions over time, but moral and spiritual components as well as ‘social license’ of knowledge practitioners. The practices that generate Karuk TEK are organized around the economic, cultural, social needs of particular communities, which in turn create accountability as a mechanism underscoring its ultimate sustainability. Thus, traditional methods literally could not work if they are under non-traditional goals. Not only is a true understanding of what Karuk knowledge actually prescribes impossible for scientists to gain in a short time because it is encoded in Karuk language and cultural life in ways that only someone who spent years learning about Karuk could even come close to understanding, traditional knowledge is often underlined by standards of ethical treatment of nonhumans that rule out many scientific methods that would violate these standards.

There are other “practical” ways that Karuk and Western knowledge systems are organized that prohibit the kind of “sharing” that many non-Native agency practitioners might envision. As Citizen Potawatomi Philosopher Kyle Powys Whyte points out, in many cases traditional knowledge systems cannot be used by scientists or agency staff because the scientists and agency staff do not have the family structures and social systems to truly implement particular traditional practices such as fire regimes given the fact that there are no children in most federal agencies to do the activities designated for children. And from an ethical level, often knowledge cannot or should not be shared because it imposes unique

risks on Karuk traditional practitioners (e.g. risks that scientists do not have to bear). Sharing knowledge could for example disclose a sacred place or hunting ground that should not go public. In the context of recent aggressive University copyright practices the risks to traditional practitioners from sharing traditional knowledge are even greater.

At the end of the day, it is important for everyone to realize that attempts to try to separate Karuk TEK from the context of traditional management, and in turn to extricate traditional management out of the cultural, spiritual and social context is a form of extraction. Even the notion of “traditional ecological knowledge” as a “stand alone” concept can only be conceptualized as a result of a deep commitment to the belief that humans are separate from the earth. This formulation of a divide between nature and culture is directly opposite from that which is actually occurring. Furthermore, to imagine that “traditional knowledge” could be thus separated or removed is on the one hand a negation of the human experiences and needs of the Karuk community.

Management Is Culture: The Integration of Ecological, Economic, Cultural and Health Outcomes of Traditional Management

Too frequently, the significance of American Indian relationships with the natural world are at best lost in over glamorized and essentialized characterizations of Noble Savages, or at worst, entirely invisible. To comprehend and acknowledge Karuk relationships with knowledge, management and other species requires non-Indians to recognize not only the depth of the human scale of Native American genocide, but the fact that this genocide has also been an assault on a spiritual order that nourished and governed an entire field of ecological relationships.

Not only is Karuk traditional knowledge inseparable from its ecological and cultural context in the mid-Klamath, there are multiple benefits to both people and the landscape from this ongoing system of human-landscape interactions. This report describes the ecological, social, political, psychological and economic impacts of denied access to participation in traditional management for the Karuk

community as fundamentally interconnected. As Karuk Cultural Biologist, dipnet fisherman and spiritual leader Ron Reed explains:

Without fire the landscape changes dramatically. And in that process the traditional foods that we need for a sustainable lifestyle become unavailable after a certain point. So what that does to the tribal community, the reason we are going back to that landscape is no longer there. So the spiritual connection to the landscape is altered significantly. When there is no food, when there is no food for regalia species, that we depend upon for food and fiber, when they aren't around because there is no food for them, then there is no reason to go there. When we don't go back to places that we are used to, accustomed to, part of our lifestyle is curtailed dramatically. So you have health consequences. Your mental aspect of life is severed from the spiritual relationship with the earth, with the Great Creator. So we're not getting the nutrition that we need, we're not getting the exercise that we need, and we're not replenishing the spiritual balance that creates harmony and diversity throughout the landscape.

Well-meaning attempts to use particular ideas or practices by non-Native agencies have cued into the ecological benefits of traditional management, but have followed Western assumptions about the both the nature of knowledge and the separation of nature and culture. In so doing they fail to see the fundamental interconnections between the ecological and the social. When non-Tribal agencies and organizations use their (often) greater institutional capacity to attempt to adopt and use elements of Karuk TEK (e.g. burning) these actions becomes a form of cultural appropriation and deprive the Karuk community of the opportunity to carry out their own culture. Non-Tribal actors outside the Karuk Tribe are very much needed to work alongside the Karuk Tribe to communicate the message of the importance of Tribal management and especially to implement policies to enact that management.

The bulk of this Social Impact Assessment is directed towards addressing the multiple social, economic, and health benefits that come to the Karuk community from participation in the process of traditional knowledge generation and its application through management. Indeed Karuk culture, economy, spirituality and social relations have in turn been fundamentally impacted by the loss of knowledge sovereignty and the resulting altered ecology on the Klamath. Take for example, one ecological change such as the reduction of foraging habitat for elk as described in

the passage above. This encroachment of brush means fewer opportunities for successful hunting, that in turn affects diet, food supply, the ability to engage in barter and trade, fewer social activities associated with hunting, the ability to properly conduct ceremonies, and overall cultural identity. Individuals who are unable to provide for their families and communities experience role stress and threats to their identity as Karuk people, or as men when they are unable to fulfill prescribed roles as hunters and providers with fewer elk to hunt. On a larger scale the Karuk Tribe faces political challenges concerning the potential erosion of tribal sovereignty in the face of continued lack of recognition of land title and taking of resources by Federal and State agencies. Chapter Two will address the issue of explicit criminalization of Karuk knowledge and cultural practice. Criminalization of cultural practice matters for sovereignty because it directly prohibits the enactment of practices needed for the regeneration of knowledge. Karuk culture and ecological knowledge are lost when the actions of the state deny Karuk people access to the land and food resources needed to sustain culture and livelihood. Chapters Three, Four and Five will address each component of these fundamentally interconnected economic, social and health impacts.

Chapter Two: “Its Illegal to be a Karuk Indian in the 21st Century”

In order to maintain a traditional Karuk lifestyle today, you need to be an outlaw, a criminal, and you had better be a good one or you'll likely end up spending a great portion of your life in prison. The fact of the matter is that it is a criminal act to practice a traditional lifestyle and to maintain traditional cultural practices necessary to manage important food resources or even to practice our religion. If we as Karuk people obey the “laws of nature” and the mandates of our Creator, we are necessarily in violation of the white man's laws. It is a criminal act to be a Karuk Indian in the 21st century.

– Leaf Hillman, 2004

Despite the importance of traditional knowledge and management activities for the mid-Klamath ecosystem, the production of healthy Karuk foods, cultural activities, social structure, spirituality and for the physical and mental health of individuals, both the legitimacy of and practical ability of Karuk people to carry out traditional knowledge, management practices and culture on the Klamath have been contested since the arrival of non-Native peoples, and especially since the Gold Rush period of the mid 1800's (Karuk Social Impact Assessment 2007, Karuk Historical Timeline, 2011). Furthermore, many important activities of traditional management, activities that are from a Karuk perspective necessary for both ecosystem and community health, and for the process of reproducing traditional ecological knowledge, remain either directly illegal under Federal or State laws, or are handled by the agencies in ways that centrally impinge upon their practice. Important steps towards the expanded application of Karuk traditional ecological knowledge and knowledge sovereignty can thus be taken by the agencies merely by removing these barriers to cooperation. Part II of this series will outline these opportunities in more detail.

As background to communicating the importance of knowledge sovereignty for the Karuk Tribe today, this chapter provides some history and scope of the extent to which knowledge systems and activities have been misunderstood,

contested and criminalized. Overt and dramatic disruptions of Karuk management and knowledge systems began with the intensive influx of non-Natives to the mid-Klamath, the failure of the U.S. Congress to ratify the treaties it signed with Karuk people, and the direct genocide of the gold rush era in the 1850s. Yet the period since the establishment of the Klamath National Forest whereby non-Native management practices have been the dominant force in shaping the ecosystem must not be underemphasized. During this time tribal knowledge about ecological processes and conditions has variously been made illegal, ignored, and when incorporated they have been misapplied and taken out of context. As Bill Tripp, of the Karuk Department of Natural Resources notes “Consultation is of course only moderately effective, it depends on who you are talking to, just because you have the Forest Service and Tribe talking together does not mean that such “consultation” is going to be effective.” All too often this program merely serves as a means to check a consultation box or otherwise protect the agency interest. Over the past 10 to 15 years relatively benign factors such as unaware curiosity and a series of misfits between Native and Western worldviews have coupled with lack of understanding and respect to erode the knowledge sovereignty in Native communities and the Karuk Tribe in particular.

Historical Influences on Loss of Knowledge Sovereignty and Traditional Management: Genocide and Forced Assimilation

Major shifts in the Karuk ability to maintain sovereignty over knowledge and cultural practices, tend to food species and the landscape, and carry out daily life began during the gold rush, some 150 years ago. The arrival of miners, the military, and settlers into Karuk territory was accompanied by direct genocide in which many people and much knowledge was lost (Norton 1979, 2013). Violent social dislocation, including the outright killing of three-quarters of Karuk people, the relocation of villages, and attempts to move people onto reservations all interfered with everyday ability of people to survive, much less carry out culture and the practices of tending to the natural world (Lowry 1999, Norton 1979, 2013). In 1851

and 1852, the state of California spent \$1 million per year to exterminate native peoples (Chatterjee 1998). Beginning in 1856, the Governor issued a bounty of \$0.25 per Indian scalp, increasing it to \$5.00 per Indian scalp in 1860 and reimbursed bounty hunters for the cost of ammunition and other supplies. Then, in 1864 the Hoopa Valley Indian Reservation was established and all Karuk people were ordered to leave their ancestral lands along the mid-Klamath and lower Salmon rivers and relocate to the reservation. Many people did so. Others fled to the high country or escaped and returned. Yet due to this overt displacement many Karuk people continue to live on the Hoopa reservation, in cities on the coast, and spread across California and Oregon. This dispersal of people had significance for their knowledge sovereignty and cultural practice including people's ability to participate in cultural activities to tend the landscape

During this wave of activity actions of gold miners the military and white settlers damaged the ecosystem, restricting the supply of some food sources, including fish and wild game, although they did not initially destroy these populations. This time period marks the beginning of forcible disruption of Karuk land management techniques, especially practices of burning. White settlers and miners did not understand the role of fire in the forest ecosystem with the result that since the gold rush period, Karuk people have been forcibly prevented from setting fires needed to manage the forest, prolong spring run-off, and create proper growing conditions for acorns and other foods (Margolin 1993, Anderson, personal communication). For many years following white settlement in their territory Karuk people were simply shot for engaging in cultural practices such as setting fires (personal communication). Despite these circumstances Karuk people have continued to engage in cultural burns, often at great peril.

A second significant factor affecting knowledge sovereignty concerns the lack of recognition of land title. In 1851 the U.S. government negotiated a treaty with the Karuk Tribe (Hurtado 1988). White landowners across what had just become the state of California however found the treaties unappealing as they gave Indians land, flour, pack animals, dairy cattle, and beef cattle which would likely mean Native people would work their own ranches instead of providing cheap labor. "Treaties

that conflicted with agriculture and mining interests had little hope of finding support in California's state government" which "did everything possible to thwart them" (Hurtado 1988:139-40). On July 8, 1852, due to pressure from the Governor of California, Congress refused to ratify this and other California treaties of that time. As a result, 18 California tribes, including the Karuk, who had agreed to treaty terms in good faith, were left without any of the protections, land or rights they reserved in their treaties (Hurtado 1988).

A third historical factor behind the loss of knowledge sovereignty and ability to carry out Karuk management practices in the forest was the period of forced assimilation to the dominant culture through boarding schools and other institutional processes. Like youth from tribes throughout Canada and the United States, Karuk children were separated from families at young ages and taken to boarding schools in Oregon and elsewhere for the specific purpose of assimilation. They were prevented from speaking Karuk, from practicing Karuk customs and forced to eat a diet of "Western" foods. The result was that Karuk children were separated from their families, traditions and their ancestral territory often for years, and were unable to learn fishing, gathering and management practices or cultural ceremonies.

Criminalization and Restriction of Management Activities Today

Today knowledge sovereignty for the Karuk and many other Native people is threatened by the criminalization of the traditional cultural activities that are necessary for its regeneration. Activities including the gathering acorns, mushrooms, berries, basketry materials, and the use of fire to create the proper conditions for these species use, today remain either illegal under Forest Service law, or are regulated by the agency in ways that limit or prohibit Karuk access. For example, many foods and numerous cultural use species are enhanced by burning. Burning is directly necessary to produce the correct kinds of shoots for weaving, as well as to keep materials in adequate condition. Karuk Cultural Biologist Ron Reed describes the holistic system of burning.

You have deer meat, elk and a lot of times associated with those acorn groves are riparian plants such as hazel, mock orange or other foods and fibers, materials in there that prefer fire. The use of those materials is dependent upon those prescribed burns. So when you don't have those prescribed burns it affects all that in a reciprocal manner. It's a holistic process where one impact has a rippling effect throughout the landscape. We can only have that for a certain amount of time before the place becomes a desert without cultural burns, because the plants are no longer soft and the shoots are no longer food, instead they become these intermediate stages where they are just taking up light and water and tinder for catastrophic fire. So it has an impact not only on the species we are talking about, but how you harvest and manage and hunt those species as well.

Non-Indian fishing regulations, such as those developed and enforced through California Department of Fish and Wildlife, have often failed to take into account the Karuk as original inhabitants, their inalienable right to subsistence harvesting and the sustainable nature of Karuk harvests. As a result they have attempted to balance the subsistence needs of Karuk people with recreational desires of non-Indians from outside the area. Karuk tribal member Vera Davis notes the imbalance and injustice of this view:

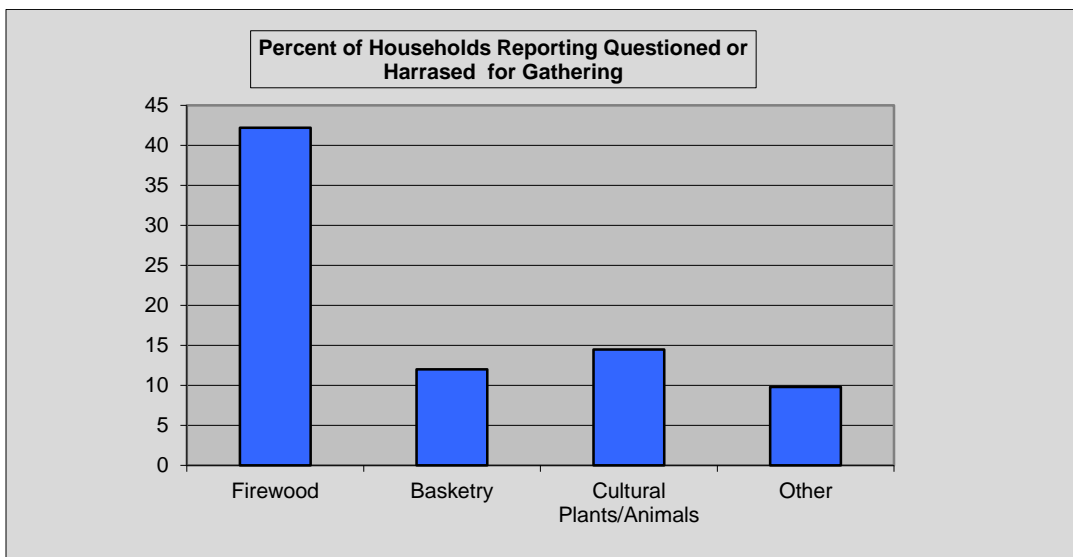
Now I don't think that no one has a right to tell us when we can do it when you have people who pay hundreds of dollars to come in, kill the venison and get the horns. I don't think that is fair because this is our livelihood . . . We had supplies from the river the year round. We hadn't been told that we couldn't get our fish any time of the year. That was put there for us by the Creator and when we were hungry we went to the river and got our fish.

Vera Davis (quoted in Salter 2003, p.32).

However, hunting regulations are set by the State of California according to "white man's" rather than tribal law. If a Karuk person hunts "out of season" or gets a deer without purchasing a tag from the State it is considered poaching. Getting caught for poaching has a variety of consequences depending on the circumstances and if it is a repeated offense. Director of the Karuk Department of Natural Resources and Ceremonial Leader, Leaf Hillman describes this situation:

“The act of harvesting a deer or elk to be consumed by those in attendance at a tribal ceremony was once considered an honorable, almost heroic act. Great admiration, respect and celebration accompanied these acts and those who performed them. Now these acts (if they are to be done at all) must be done in great secrecy, and often in violation of Karuk custom, in order to avoid serious consequences.”

As Hillman explains it, government regulations force assimilation to the point of criminal indictment. While there are provisions for some forms of subsistence gathering through Forest Service policy, in the 2005 Karuk Health and Fish Consumption Survey tribal members were asked whether members of their household had been questioned or harassed by game wardens while gathering a variety of other cultural and subsistence items. As indicated below, 12 percent reported such contacts while gathering basketry materials and over 40 percent while gathering firewood. Twenty percentage of survey respondents reported that they had decreased their subsistence or ceremonial activities as a result of such contacts. To be fined or have a family member imprisoned imposes a significant economic burden on families. This is a risk that many are unwilling or unable to take.



In the words of traditional dipnet fisherman and spiritual leader Kenneth Brink

Now we are being stripped of a lot of our duties as a Karuk person, as a traditional male, and that's just because of regulations...the new regulations they have, rules and regulations, keep us actually from living our traditional way of life...our ceremony have been, you know, stripping down because of regulations...now we're only allowed to do certain things in our ceremonies, not allowed to do our traditional burns or nothing no more

Karuk Tribal member and spiritual leader Achviivich notes “Our way of lives has been taken away from us. We can no longer gather the food that we gathered. We have pretty much lost the ability to gather those foods and to manage the land the way our ancestors managed the land.” Karuk tribal member Jesse Goodwin explains how “usually, they just take our gun rights away from us, try to see if there’s any way of us never being able to do it again, and then after that they send you to jail.” Tribal member Mike Polmateer explains the reality of growing up under these circumstances:

When I hunted with my uncles, for the longest time I never knew you hunted during the day. We always went and got our meat at night. And it was always about where's the game warden, you know, where's the cops, and you know, things like that. So that's one of the things that stuck in my mind as a young kid. We were always watching for headlights, you know, always trying to hide from the law, out doing what we were supposed to do, which was provide for our families. We weren't out selling meat. We weren't out selling hides.

In the 2005 Karuk Health and Fish Consumption Survey tribal members were also asked whether members of their household had been questioned or harassed by game wardens while gathering a variety of other cultural and subsistence items. Twelve percent reported such contacts while gathering basketry materials, and over 40 percent indicated harassment while gathering firewood. Twenty percent of survey respondents reported that they had decreased their subsistence or ceremonial activities as a result of such contacts.

The lack of recognition of land title is coupled with a lack of recognition of fishing rights. Whereas long standing cultural traditions existed for regulating and sharing fish and other resources both within the Karuk Tribe and between neighboring tribes, the entry of non-Indian groups into the region led to conflict and

dramatic resource depletion (McEvoy 1986). During the 1970's the Federal government stepped up enforcement and forcibly denied Karuk people the right to continue their traditional fishing practices (Norton 1979) by arresting them and even incarcerating them. Karuk fishing rights have yet to be acknowledged by the U.S. government, though now tribal members may fish at one 'ceremonial fishery.' As tribal member Jesse Coon explains

We can fish at the falls. Dipnet and that, you know, that's the only place we can fish really. But we're not able to go out and go hunting anymore, without getting in trouble for it or something, you know, so—now we have to go to the store to buy our food, and get different kind of foods that aren't sustainable for our bodies, like food that was made here for our people, you know? So a lot of it has changed that way, you know....

Access to food and notions of how land should be used may be contested, but the state holds the ability to assert its version. Traditional Karuk Fisherman Mike Polmateer describes his experience fishing at his family's long-established site:

I fish at my family's hole up here at Dillon Creek every single day during the winter, and I'm checked for my license no less than six times per year, by the same game warden, by the same two game wardens over and over and over, trying to catch me keeping fish. They sit up here on a point with binoculars watching me catch fish, and they watch me return them to the water. Because I'm—I'm afraid . . . There's consequences to be suffered . . . If you send your child out in to the world right now not knowing there's consequences to be suffered, they're going to end up like many many natives, not only in this country but in other countries, in the penal system. What I'm seeing now is this penal system is—they're raising our young kids now. They're going in at 18, 19, 20 years old, not coming out until they're 27, 28, 30 years old.

Regulations affect not only fishing but also hunting, mushroom gathering and gathering of basketry materials. Karuk Tribal member and spiritual leader Achviivich explains how in the face of degraded forest conditions due to fire exclusion and possible harassment by law enforcement many people give up hunting and buy store bought foods instead:

How much society's laws are preventing me from gathering? Well, 80% 90% . . . do I want to go out there and be hassled about it? Why? I go down to the damn store and buy that stuff a lot, you know. It is going to

cost you more to go hunt, to go out into the woods and get it. It is not like it is readily available no more. It is not like you have a gathering spot like we used to have a gathering spot. You know, you used to have a gathering spot to gather something and you would go there and gather. Now you don't. Now you can't burn there. You can't burn there every year and every other year or however often you need to burn it in order to make your crop come up good. You can't do that. You can't burn. And you have to have a permit to get everything. Everything. You have to get a permit to get rocks off the god damn river bar out here. Did you know that?

Karuk cultural ecological knowledge is lost when the above actions of the state deny Karuk people access to the land and food resources needed to sustain culture and livelihood. Forced assimilation happens even more overtly when for example game wardens arrest tribal members for fishing according to tribal custom rather than state regulation. Karuk Tribal member and spiritual leader Achviivich describes an example of the significant use of force that can be applied for minor infractions:

Here was a tribal member, two tribal members right up there and they had them sprawled on the ground with a gun on their, on the back of their head because they didn't cut their mushrooms in half.

Denied access to traditional management at the hands of non-native agencies has significant health, cultural and spiritual impacts including denying them access to healthy foods (see Jackson 2005, Norgaard 2005). Yet Karuk lifeways continue to be practiced both overtly (when they can get away with it) and covertly when they cannot. From a Karuk perspective, continuance of these traditional lifeways and practices is essential not only for food, but for the maintenance of traditional knowledge, cultural and tribal identity, pride, self-respect and above all, basic human dignity. Thus, while non-Tribal agencies have attempted to gain access to Karuk knowledge, a far more effective and appropriate action these agencies can take is to remove the barriers their policies put into place. Part Two of this report series is devoted to detailing these opportunities.

Chapter Three: Impacts to Social Networks and Substance Economy

And it's, sometimes, when there's low economy and there's no other jobs to do and it's just tough, yeah, people – you drink it or you smoke it away because, well, you know, what the hell, there's nothing that you can really do that's going to be good anyways. So you pass the day by numbing the senses and – you know when things aren't good with the fish, people take it out because they're stressed, right? Normally, that salmon would be that role of building that capital when you don't have that capital, it's not a reservoir of, either monetary or even, kind of like, 'I owe you one,' type of thing to draw from or relationship in the community. Yeah, you get stressed. Just like people in a contemporary sense would get stressed for not having financial security, when you don't have salmon security, it adds all those other dimensions of stress to it.

Frank Lake, Karuk descendent

Early anthropological account described Karuk people as amongst the wealthiest in the state (McEvoy 1986, Andersen 2006). Today Karuk people are amongst the hungriest and poorest people in the state. While the decline of salmon and other riverine foods are centrally important, there are at least 25 species of plants, animals and fungi that form part of the traditional Karuk diet to which Karuk people are currently denied or have only limited access. The percent of families living in poverty in Karuk Aboriginal Territory is nearly three times that of the United States as a whole. This dramatic reversal in economic circumstances is the direct result of the systematic, state sponsored disruptions of the existing Karuk cultural and economic organization that were at the heart of traditional management and traditional knowledge. Karuk sovereignty over culture and knowledge has ongoing economic consequences today.

The non-Indian “western” capitalist economy that has emerged around the world classifies wealth in terms of dollars. The alteration of the ecosystem and disruption of cultural practiced described in Chapter Two was implemented on the

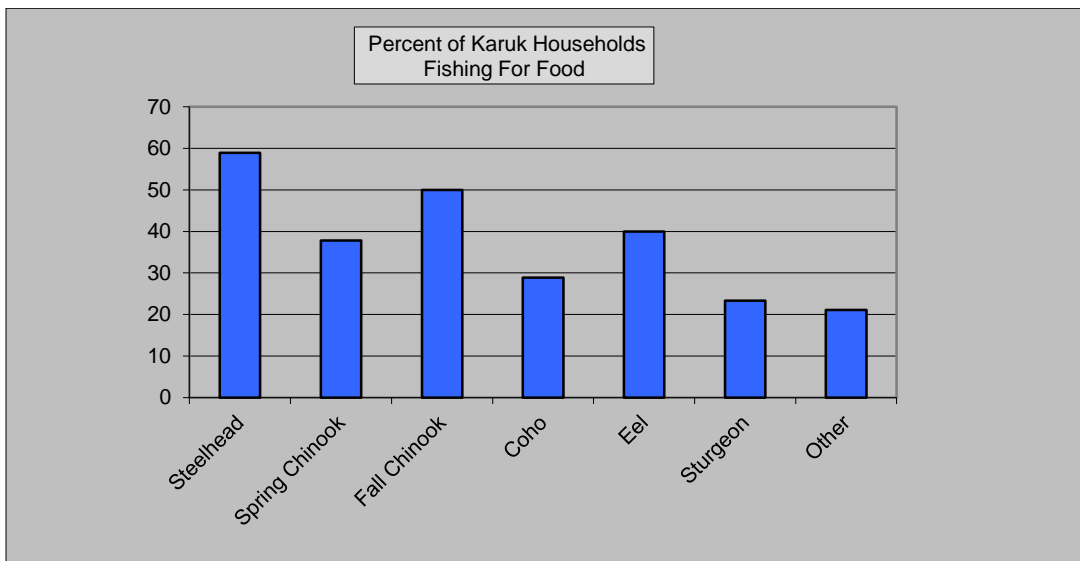
Klamath along the same time that this monetary economy achieved dominance. It is difficult therefore to know exactly what (if any) Karuk monetary economic uses of the forest would have been occurring today had the Karuk Tribe's management authority not been contested. Instead, this section will first note that the reduced ability to carry out denied cultural practices has profoundly disrupted the existing Karuk economic system, and second, that the extraction of monetary wealth from the region by non-Native people has occurred via the same management practices that have transformed the landscape. Karuk management practices that were oriented around species complexity and long term sustainability were forcibly replaced by extractive management activities that were geared towards the withdrawal of commodities (gold, conifer trees, fish). These commodities became the basis of monetary wealth for non-Native people. Laws and policies designed to reduce Karuk people's ability to inhabit and manage their lands were implemented by the state of California and the Federal government specifically to achieve this transfer of wealth to non-Native settlers in the region. Thus, while we know that Karuk people were wealthy prior to European invasion, that poverty in the Karuk community is now very high, and that the enforced changes from Native to non-Native land management was a key mechanism for this transfer of wealth, we cannot describe specific dollar impacts to the Karuk Tribe to the changing forest landscape. Most importantly for the present, continued denied access to cultural practices that constitute traditional Karuk knowledge including the disruption of ceremonies and the exclusion of fire from the landscape continue to be instrumental to this economic reorganization.

While the change in economic systems makes impossible some calculations, we can examine the impacts of denied access to traditional management for the Karuk subsistence economy today. This chapter describes how Karuk cultural knowledge and practice has been a critical activity underpinning this subsistence economy, which in turn provides individuals and families food, social capital, access to trade networks, and enhanced social networks and forming a type of "social glue" for relationships between families, and elders and youth across the Karuk community. Much of this subsistence economic activity including gathering acorns,

mushrooms, berries, basketry materials, and burning is now either impacted by the exclusion of fire, outright illegal, or regulated by the Forest Service and other agencies in ways that limit or prohibit Karuk access. The chapter describes the economic impacts of the criminalization of traditional management activities including data on hunger and food security.

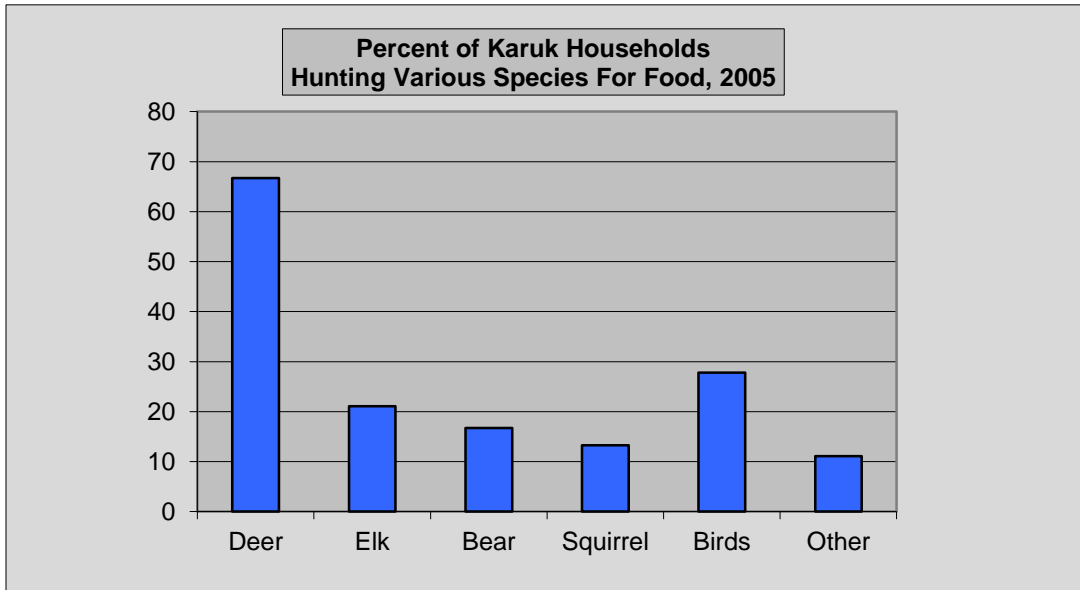
Food and Hunger

Communities are defined as food secure when all members have access to nutritionally good, safe and culturally acceptable food through local non-emergency sources at all times. For most people in the United States food security is related to income and monetary wealth. In the Karuk community a high percentage of families living in aboriginal territory continue to rely directly on the land for a meaningful portion of their food. In the 2005 Karuk Health and Fish Consumption Survey we asked respondents whether their household fished for a variety of common species. Over half of families reported that someone in their household continued to fish for Steelhead and Fall Chinook, see Figure One below.



Similarly we asked whether someone in their household hunted for a variety of common animals including deer, elk, bear and others. Again, attempts to access

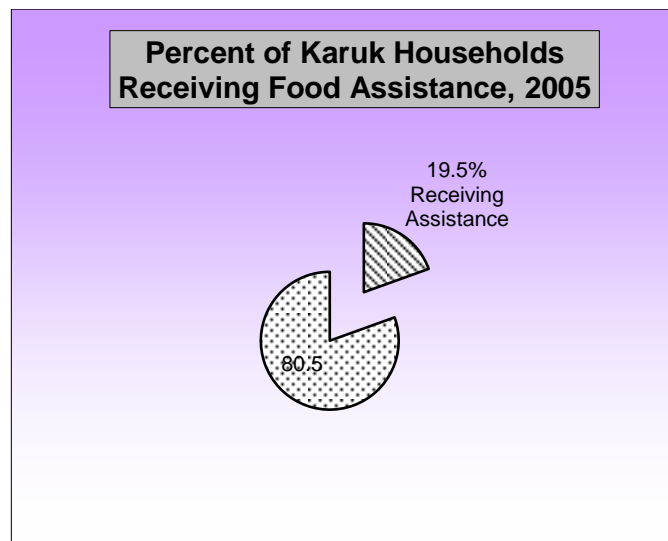
subsistence sources of food are widespread in the Karuk community. Note that nearly seventy percent of households reported that someone in the family hunted for deer, see Figure Two below.



Yet while a significant percentage of Karuk people continue to fish and hunt traditional foods, over 80% report that they are unable to harvest enough of these foods to meet their family needs. Furthermore, the foods that were most central in the Karuk diet, providing the bulk of energy and protein: salmon and tan oak acorns are amongst the missing elements. Without salmon and tan oak acorns, Karuk people are currently denied access to foods that represented upwards of 50% of their traditional diet. The absence of food and cultural use species in this overgrown forest undermines the subsistence economy. Food insecurity within the Karuk Tribe is evidenced by the fact that forty-two percent of respondents living in the Klamath River area received some kind of food assistance, and one in five respondents use food from food assistance programs on a daily basis (Norgaard 2005, 2007). With the decline in access to once abundant food sources such as deer, acorns, elk, salmon and mushrooms, a significant percentage of tribal members rely on commodity or store bought foods.

Especially in this remote, rural community with high unemployment, the inability to access traditional food leaves Karuk people with basic issues of food

security. Recent U.S. Department of Agriculture studies show that while roughly 85% of the US population is food secure, only 77% of Native Americans in the United States are food secure (Otto and Gordon 2012). Self report data from the Karuk Health and Fish Consumption Survey indicate that nearly 20% of Karuk people consume commodity foods and another 18 percent of those responding indicated that they would like to receive food assistance but do not qualify, see Figure Three below.



Hunger and poor nutrition are bad for individual health (see Chapter Four), and difficulty in meeting basic needs results in overwhelming psychological stress as will be discussed in Chapter Five.

Subsistence Activity as Social Capital and Social “Glue”

Subsistence economic activity is critically important for providing the calories in the form of foods for survival, but it has a number of other functions as well. A central point of this report has been to illustrate how Karuk traditional knowledge is one consequence of activities and observations conducted in the landscape over time. Activities of fishing, hunting, gathering serve as an important social “glue” by bringing people together to work, socialize and pass down the values and

information now known as “traditional knowledge.” It is during the process of spending time that stories, techniques and information are shared, new observations are made, and young people are socialized around values of reciprocity and responsibility. Subsistence activities are thus central to the process of cultural transmission and cultural continuity on a practical level. As Ron Reed notes, “it’s not just a matter of what you eat. It’s about the intricate values that are involved in harvesting these resources, how we manage for these resources and when.”

The degradation of the mid-Klamath ecology under non-Native management together with explicit regulations and policies by Federal and State agencies that prohibit Karuk subsistence activity thus directly interfere with the maintenance and generation of Karuk traditional knowledge. This interruption -- which is an extension of the process of forced assimilation described earlier in Chapter Two -- has economic consequences for both the subsistence economy and the disruption of trade and social networks.

Chapter Four: Health Impacts of Denied Access to Management and Culture

- There are at least 25 species of plants, animals and fungi that form part of the traditional Karuk diet to which Karuk people are currently denied or have only limited access.
- Health benefits of traditional foods include better nutrient density, the availability of key essential nutrients, physical activity during harvesting, lower food costs, the prevention of chronic disease by consumption of more nutritious food, and “multiple socio-cultural values and traditions that contribute to mental health and cultural morale”
- The estimated diabetes rate for the Karuk Tribe is nearly four times the U.S. average.
- The estimated rate of heart disease for the Karuk Tribe is three times the U.S. average

Healthy Foods and Physical Health

Today in the face of the altered ecology of the mid-Klamath region Karuk people face significant health consequences as a result of denied access to many of their traditional foods (Norgaard 2005). This chapter will survey the importance of changes in the ability of Karuk people to carry out traditional management on their physical health. These include access to the direct benefits of traditional foods from the forest, and the exercise that comes from participation on these activities. Health benefits of traditional foods include better nutrient density, the availability of key essential nutrients, physical activity during harvesting, lower food costs, the prevention of chronic disease by consumption of more nutritious food, and “multiple socio-cultural values and traditions that contribute to mental health and cultural morale” (Kuhnlein and Chan 2000, 615; Cantrell 2001). The loss of traditional food sources is now recognized as being directly responsible for a host of diet related illnesses among Native Americans including diabetes, obesity, heart

disease, tuberculosis, hypertension, kidney troubles and strokes (Joe and Young 1994).

Around the world when Native people move to a “Western” diet rates of these diseases skyrocket. Traditional foods are higher in protein, iron, zinc, omega-3 fatty acids and other minerals and lower in saturated fats and sugar. While salmon and other riverine foods have been an important focus of past work on Karuk diet and health, there are at least 25 species of plants, animals and fungi that form part of the traditional Karuk diet to which Karuk people are currently denied or have only limited access as a result of their decline in over the past 150 years of non-Native management, or because regulations prohibit or limit access. It is especially notable that salmon and tan oak acorns, which historically provided the bulk of energy and protein are amongst the missing elements. Identified health consequences of altered diet for the Karuk people include rates of Type II diabetes that are four times the U.S. average and heart disease at three times the U.S. average (Norgaard 2005, 2007). A traditional diet and the exercise entailed in procuring it are widely recognized as both the best prevention and the best treatments for these “diet related” conditions.

While rates of heart disease are decreasing in the general U.S. population, they are on the rise for Native Americans. Rates of strokes are also higher for Indian people. Other associated conditions such as obesity result from decreased nutrition. Obesity is an issue not only of altered diet, but of a sedentary lifestyle far removed from traditional food gathering practices. Nationally high rates of infant mortality for Native peoples are also linked to nutritional deficits. Nutritional data indicate that women with diets containing adequate protein experience fewer spontaneous abortions, premature births and healthier infants. Indian Health Services reports that the infant mortality rate for Native Americans is 21 times the national average (CRIHB 2004). Finally, as a result of the high prevalence of these diseases, Native people in the U.S. have an average life expectancy that is six years lower than the general population and the lowest median age in the United States (ibid). Given the dramatic change in diet and high incidence of diabetes and heart conditions in the Karuk Tribe, high incidence of the conditions mentioned above are also suspected.

These changes in access to traditional foods have occurred during the lifespan of most adults alive today. In the Karuk Health and Fish Consumption Survey nearly 40 percent of respondents report eating meals with traditional foods once a week or more as a teenager, and another 25 percent once a day or more. Only about 7 percent indicated that they never ate traditional foods. In contrast, today less than 5 percent reported eating traditional foods on a daily basis, and only 17 percent reported eating traditional foods once a week or more (note that these numbers are still very high when compared with non-Native consumption of such foods). The number of people who report never eating traditional foods rose from 6 percent as a teenager to 22 percent today.

Not only does a traditional diet prevent the onset of conditions such as obesity, diabetes, heart disease, kidney trouble and hypertension, the tasks of acquiring traditional food provided exercise that kept people in good physical condition. There are other relationships between physical health and access in the altered forest structure. As ecologist and Karuk Descendant Frank Lake describes a brushy understory creates significant dust which is itself a health hazard:

There is a related health issues there, and I had to explain this to the firefighters just recently [summer 2008]. When there is a big clear understory and a big acorn tree with the firs and madrones mixed around. Before, you didn't have that underbrush, that younger growth of the tan oak has this kind of dust on it. And it is particularly more so on the new sprouts, the new shoots and the new leaves. So as you are going through that tan oak understory, that thick brush, you are getting that dust in your nasal cavities and your eyes and your throat. So it is actually causing additional problems. Whereas if they could just clear the understory brush out, cut it down and pile burn or even broadcast, burn the understory, it would actually reduce that part of that tan oak dust being an irritant and a potential health problem that is associated with trying to go out there and collect.

Dr. Frank Lake, Wildlife Resource Advisor, USFS

Chapter Five: Mental Health Impacts of Denied Access to Management and Culture

“For American Indians, land, plants, and animal are considered sacred relatives, far beyond a concept of property. Their loss becomes a source of grief” (Brave Heart and DeBruyn 1998, 62).

- Both access to an intact natural environment and participation in one’s culture are widely recognized as vital for psychological well-being.
- Chronic stress from the struggle to maintain culture in the face of adversity and denied access to traditional management and culture, have both negative physical and mental health impacts
- Negative mental health consequences for experiences described by Karuk people including hunger, poverty, environmental decline, threats to identity, role stress, and sense of self-efficacy, loss of meaning systems and an underlying and ongoing sense of genocide.

Just as physical health is embedded in both ecosystem health and cultural activities, so too is mental health. Important components to mental health and psychological well-being include positive sense of self worth and self-efficacy, coherent meaning systems, contact with an intact natural environment and sense of personal and cultural identity (Mirowsky and Ross 1989, Thoits 2010, Downey and Van Willigan 2005). Social scientists describe other requirements for psychological well-being including control, commitment, support, meaning and normality (Mirowsky and Ross 1989, 13). Mental health is negatively affected by physical health challenges, as well as social sources of stress caused by the absence of any of the above.

This chapter will describe the multiple important ways that current ecological conditions and the reduced ability of Karuk people to participate in traditional management negatively affects both the mental health of individuals and generate a level of chronic community stress. Knowledge sovereignty and returned

access to participation in traditional management have profound importance for renewing tribal mental health.

Social Causes of Psychological Stress

While there is a widespread assumption in popular culture that stress and its manifestations are a matter of personal fault such as insufficient individual coping skills, sociological literature makes clear that mental health stress has structural origins (Thoits 2010, Mirowsky 1989). This is true because social context profoundly affects psychological well-being. Classic work by Pearlin and Skaff 1996, Pearlin 1999 develop the notion of “ambient strains” as forms of stress that arise out of person-environment interactions. Furthermore, ambient stresses are chronic, that is they are stresses from enduring problems in daily life including conflicts, threats, poverty, stigmatization, and many more (Pearlin 1989). Not only do chronic ambient stresses have both negative physical and mental health impacts, they have greater negative impacts on psychological well being than difficult “life events” such as divorce or family death (Avison and Turner 1988). In a recent comprehensive review of forty years of literature on social stress and mental health, sociologist Peggy Thoits concludes that:

“when stressors (negative events, chronic strains, and traumas) are measured comprehensively, their damaging impacts on physical and mental health are substantial. Second, differential exposure to stressful experiences is a primary way that gender, racial-ethnic, marital status, and social class inequalities in physical and mental health are produced. Third, minority group members are additionally harmed by discrimination stress. Fourth, stressors proliferate over the life course and across generations, widening health gaps between advantaged and disadvantaged group members.”

If requirements for psychological well-being include control, commitment, support, meaning and normality, one can understand how experiences described by Karuk people in the context of the inability to carry out cultural activities their ancestral lands including hunger, poverty, environmental decline, threats to identity, role stress, and sense of self-efficacy, loss of meaning systems and an underlying and

ongoing sense of genocide add up to very significant negative mental health consequences.

Environmental Decline and Mental Health

Both access to an intact natural environment and participation in one's culture are widely recognized as vital for psychological well being. People gave vivid descriptions of a sense of oneness with the universe and joy while being on the river and in the forest.

I come out here...come out to these places, you know, and get that connection back. You know, just that silence and the liveliness of everything surrounding us, you know... everything is alive when you're out here and you can feel it and it's a bliss that you can feel—it's indescribable...

You know, my first time I went down to the falls, it was like...like...almost like being in heaven...cause it's like Shooooo, you know what I mean, that's our ceremonial fishing grounds and it's right at the base of our mountain....Sugar Loaf that we pray to...and it's medicine...and to be at both those places, you know, to be there and have Paa-oo-wich and the falls right there is just magical and to hear the raw power [of the river]...is just...it's like you're on earth but you are in a different place at the same time...

- Rabbit

In contrast, both the presence of negative environmental characteristics (e.g. awareness of environmental degradation or contamination), and the absence of positive environmental characteristics (i.e. not having enough contact with intact ecosystems) are detrimental to human health and have been understood as issues of environmental justice (Downey and Van Willigen 2005).

The impacts of environmental decline are particularly significant for Native people for a multitude of reasons. As Brave Heart and DeBruyn note, "For American Indians, land, plants, and animal are considered sacred relatives, far beyond a concept of property. Their loss becomes a source of grief" (1998, 62). Recent work on the impacts on climate change for an Inuit community in Labrador, Canada emphasizes emotional dimension of impacts as an important component of health:

“it is evident that the emotional consequences of climate change are extremely important to Northern residents. Participants shared that these changes in land, snow, ice and weather elicit feelings of anxiety, sadness, depression, fear and anger and impact culture and a sense of self-worth and health” (Wilcox et al 2013,14). The authors further write that “changes in the land and climate directly impact emotional health and well-being” (14) and coin the term “ecological affect” to describe “the affects that emerge directly from shifts, alterations and fluctuations in climactic or environmental conditions” (17).

Not only are ties to the natural world particularly strong for many Native people, but there are extensive disruptions of social, cultural and spiritual systems from both ecological change and denied access to management described throughout this report. In the wake of the Exxon Valdez oil spill researchers Duane Gill and Steven Picou described how Alaska Native communities were devastated by the combined ecological, cultural, subsistence and spiritual impacts of the oil spill (Gill and Picou 1998). Gill and Picou described the situation as one of “chronic community stress.” 1998 Indeed grief from the loss of species, and stress from the inability for Karuk people to manage the ecosystem in accordance with their cultural practices and spiritual responsibilities is expressed vividly in people’s own words in terms of emotions of grief, shame, stress and powerlessness as will be described below. The impact of each of these categories of experiences is underscored by their invisibility and the corresponding lack of legitimacy or recognition within the dominant culture – what Ken Doka calls “disenfranchised grief” (1989). Braveheart and DeBruyn also discuss the concept of disenfranchised grief and its application to Native American people. Braveheart and DeBruyn use this term to label the grief accompanied by loss of culture and forced assimilation.

Individual Mental Health: Self-Efficacy, Power and Identity

There are multiple important ways that present social and ecological conditions, including the inability for Karuk people to participate in traditional management and knowledge acquisition negatively affects the mental health of individuals.

Participation in fishing, burning, gathering and other aspects of traditional management holds immense personal and spiritual significance and are central to Karuk identity. Ron Reed describes how participation in these management activities at the heart of “being Indian:”

You can give me all the acorns in the world, you can get me all the fish in the world, you can get me everything for me to be an Indian, but it will not be the same unless I'm going out and processing, going out and harvesting, gathering myself. I think that really needs to be put out in mainstream society, that it's not just a matter of what you eat. It's about the intricate values that are involved in harvesting these resources, how we manage for these resources and when.

When people are unable to carry out these practices it creates powerful threats to one's sense of self. Also relevant for the experience is the sociological concept of alienation. Alienation can be defined as a sense of disconnection between an individual and society. Powerlessness, self-estrangement, isolation, meaningless and normlessness are five basic types of subjective alienation with serious negative mental health consequences (Seeman 1959, 1983). Mirowsky and Ross describe how “People need to feel that they are effective forces in control of their own lives. The sense of control bolsters the will to think about problems and do something about the problem” (1989, 13). Here alienation can operate in several ways. On the one hand, people express challenges in being unable to fulfill traditional roles. On the other hand, their inability to do so situates them in an unwelcome place vis a vis the dominant non-Native society. Karuk people vividly described feelings of powerlessness in the face of institutional forces that are working against ecological health while simultaneously eroding people's control of their immediate social environment. Leaf Hillman puts it this way:

Do I really think there is justice in the world? No. That's an easy one. Do I ever think that they'll be justice? No. Do I think there is any hope? I don't know. People say, “How can you be even the slightest bit optimistic?” It's not easy to be optimistic about any of these things that I'm talking about. The easy, and I think the natural thing, is to feel hopeless. Because there is not much to be optimistic about.

In their landmark text Social Causes of Psychological Distress authors Mirowsky and

Ross (1989) highlight control as one of five necessary conditions for positive mental health: “feelings of personal powerlessness are an important predictor of psychological distress (Seeman 1959, 1983, Mirowsky and Ross 1986, 1989). Others described the experience of environmental decline as “enduring an assault on one’s relations” and yet being powerless to fully stop it:

You know, that spiritual tie, kind of more like kinship or family type of relationship. You know, that’s where I think the grief comes in, It’s like, a sense of power – powerlessness. You know, and yet what can you do? It’s like all you can do is, you know . . . You basically see this assault or this attack on your family, either directly as humans, but also the extension of your family relationship and the tribal perspective of seeing that with salmon, you see this attack. You see this, you know, and there is this constant, I guess the only word I can think of is assault on them. And there are certain things you can do within your capacity, and then there’s some things that are so broad outside of the influence, that it’s hard to comprehend what’s going on.

Frank Lake, Karuk descendent

The loss of control in relation to cultural activities has a clear association with genocide as described here: “Our way of lives has been taken away from us. We can no longer gather the food that we gathered. We have pretty much lost the ability to gather those foods and to manage the land the way our ancestors managed the land.” Such experiences are not unlike what Downey and Van Willigen 2005 found in their work on how proximity to environmental contamination has negative mental health effects including personal powerlessness.

Table 1 Chronic Stressors in Karuk Community

Ecosystem decline
Inability to practice cultural management
Sense of cultural genocide
Economic adversity
Hunger

Role Strain and Role Stress

Another important component to mental health is a sense of “normalcy.” Mirowsky and Ross write that normality “is one of the experiences critical to positive

psychology” (1989, 15). In contrast they describe “structural inconsistency, role stress, and a disordered life-cycle make it difficult or impossible to meet normal expectations.” Although Karuk people likely experience multiple of the above conditions, accounts of role stress and role strain in the context of denied access to carry out aspects of traditional management and Karuk culture are particularly vivid. Mirowsky and Ross define “role stress is a disjunction or inconsistency in the system of roles, so that normal obligations cannot be met. . . Role stress produces role strain, which is the frustrating sense of not being able to understand or meet the normal expectations of one’s roles.” In addition to the more individualized threats to identity and sense of control mentioned above, Karuk people describe role strain due to the inability to fulfill responsibilities to the creator, to particular species in the ecosystem and to the human community.

While literature on role strain engages the importance of being able to fulfill expected roles, here the situation is even more troubling. People describe how their moral responsibilities are being blocked and their obligations rendered impossible to fulfill. People described how the situation represents an extreme harm to traditional conceptions of moral life itself, literally denial of someone's being able to do what is right to them. The overall position of being unable to carry out culture practices and responsibilities is understood in the context of genocide, contributing to yet another level of emotional harm.

The Creator has given me a responsibility. He instructed us how we were to do this from the beginning, and that we were given the promise that the Karuk people would endure forever if you did your part, and if you continue to do what you are instructed to do.

Now we are being stripped of a lot of our duties as a Karuk person, as a traditional male, and that's just because of regulations...the new regulations they have, rules and regulations, keep us actually from living our traditional way of life...our ceremony have been, you know, stripping down because of regulations...now we're only allowed to do certain things in our ceremonies, not allowed to do our traditional burns or nothing no more... Kenneth Brink

Traditional management refers to care for the environment, but managers have specific social and cultural responsibilities to their families, to elders and the Karuk

community as well. Role strain also comes from the inability to fulfill obligations to the human community such as the ability to provide deer, acorns or other traditional foods. In this man's descriptions the angst in relation to not being able to carry out responsibilities is tied in with the sense of oppression from the outside non-Indian agencies:

A Karuk male if he was a traditional male, he'd be feeling like he was stripped of his tradition, you know, stripped of his way of life because he is no longer allowed to go out and get a deer to provide for his family or to go out and get more than two fish or something to provide for his family, or any of that picture there you know. And if you don't burn, if you don't get Morrel mushrooms...and in that sense, we are being stripped of a lot of our duties as a Karuk person, and as a traditional male.
Kenneth Brink

This role strain has negative consequences for identity, personal pride and general mental well being, as Ron Reed describes here:

When you're not able to go upslope and go manage, you're not able to go up and reap the harvest of that management and when you're not able to go produce for your children and give things for each other for the well-being of life, then all of a sudden, that puts you in this little down feeling. You're down casting yourself. I think that's where a lot of the people in Karuk tribe are because of our inability to get to these resources that have been given to us by the creator. We understand very much that we're a proud people. We're here for a reason, but a lot of us struggle with modern society, trying to figure out how do we integrate into modern society?

Thus, in the absence of being able to fulfill role obligations and achieve a positive sense of one is as a Karuk person, another key element of mental health is impacted and that is the ability to have meaning. Mirowsky and Ross (1989) list "meaning" and its absence : Disorganization is a condition in which there are no guidelines, or a welter of inconsistent guidelines, for action and evaluation. Meaninglessness is the corresponding sense that the world is unintelligible, that life is without purpose, and that action is inherently discordant" (1989, 14). The authors go on to note that "A sense of meaningful existence seems important to well-being for two reasons. A world that cannot be understood cannot be controlled. In a chaotic world, all

outcomes are chance. Beyond the issue of control, people may require a sense of purpose, significance, and value in their lives.“

Finally, there is a level of collective “community stress” which results from a general awareness that Karuk people are denied access to conduct appropriate cultural activities. This too is described as a deeply painful experience for the surrounding community. On the one hand, when such stressors are occurring to individuals widespread throughout the community there is an added level of collective trauma. But even beyond this, the harms are not just experienced by individuals in an additive fashion. The sense of meaning, significance, threat and violence are impacts to the community structure themselves. These emotional impacts of the impaired social and ecological activities that ripple through the community, are thus examples of stressors that proliferate over the life course and across generations (Thoits 2010, S42).

Mental Health Stressors are Both Individual and Community Wide

At the individual level, Karuk people are observed to experience chronic stressors from threats to meaning systems, identity, role strain and powerlessness in the face of denied access to traditional management. At the collective level racism, the struggle to maintain culture in the face of adversity, and an ongoing sense of genocide are chronic stressors on the community. In contrast, there is widespread acknowledgement in the literature of negative mental health consequences for experiences described by Karuk people including hunger, poverty, environmental decline, threats to identity, role stress, and sense of self-efficacy, loss of meaning systems and an underlying and ongoing sense of genocide. Examples of these psychological experiences are prevalent. As the third key finding of her review Thoits notes that minority groups are additionally burdened by discrimination stress, which damages physical and mental health: “Discriminatory experiences are significantly associated with self-rated poor health, chronic health conditions, disabilities, high blood pressure, psychological distress, anxiety disorder, and major depressive disorder, among other conditions, even when other life stressors are controlled” (Thoits 2010, S 45).

In this case the notion that American Indian people would inevitably disappear that implicit in the discourse of manifest destiny that legitimated genocide during the 1800s actively perpetuates racism today. The narrative that Native people are gone remains a pervasive and insidious force legitimating natural resource policies that profoundly damage Karuk life ways. Yet nothing could be further from the truth. In contrast, as they have recovered significant political and economic standing, Native American tribes across the United States including the Karuk have become increasingly involved in natural resource management. Tribes remain disadvantaged in these settings however due to insufficient understanding of their unique political status and cultural perspectives, the lack of acknowledgment of the violent history perpetuated against them through both genocide and forced assimilation, and a profound misunderstanding of how present day natural resource policies and multiple forms of denied access to traditional management continue the processes of genocide and forced assimilation today.

Association of Environmental Degradation and Denied Access to Management With Genocide.

Witnessing the denial of Karuk efforts to maintain cultural activities in the landscape is associated with genocide in several ways. On the one hand, denied access to management makes impossible the social and cultural practices described above, such actions are quite literally the present face of cultural genocide and forced assimilation as when activities to renew cultural knowledge cannot take place and important cultural practices cannot occur. On the other hand, experiences of fisheries, forest and fire policy that are set according to non-Native values and philosophy are more generally associated with a long felt awareness of Karuk culture and life under attack. Researchers note:

American Indian people are faced with daily reminders of loss: reservation living, encroachment of Europeans on even their reservation lands, loss of language, loss and confusion regarding traditional religious practices, loss of traditional family systems, and loss of traditional healing practices. We believe that these daily reminders of ethnic cleansing coupled with persistent discrimination

are the keys to understanding historical trauma among American Indian people (Whitbeck, Adams, Hoyt and Xiaojin 2004).

Karuk families have experienced direct genocide within the memory of people alive today. Such trauma is furthermore is an ongoing process through the destruction of the resource base and the loss of culture today. The notion that Karuk life and culture could come to an end is a grim background cadence to people's everyday sensibility.

You know, the creator made the Salmon, it's here for a reason and it's supposed to always be here. The Karuk people actually believe that if the Salmon quit running, the world will quit spinning, you know. Maybe the human race as we know it may be nonexistent and the dinosaurs are going to walk again . . . If the river quits flowing, it's over. If Salmon quit running, it's like the sign of the end. Kenneth Brink

It is also worth noting that racism itself has measurable negative health impacts: "Racism in both is institutional and individual forms remains an important determinant" of poor health (Williams 279, 2012).

Awareness of ecosystem decline is a chronic stress for many Karuk people. In this case however, there is an increased stress due to the awareness that the ecosystem is declining because it is being regulated by outside agencies, and because the failure to allow Karuk participation in management is an aspect of cultural genocide. Events connected to the experience of catastrophic wildfire and firefighting activities, racism, the struggle to maintain culture and ecosystem decline are each sources of chronic stress. Mirowsky and Ross describe how "People need to feel that they are effective forces in control of their own lives. The sense of control bolsters the will to think about problems and do something about the problem" (1989, 13). In contrast, Karuk people consulted for this project vividly described feelings of powerlessness in the face of institutional forces that are working against ecological health while simultaneously eroding people's control of their immediate social environment. Karuk Eco-Cultural Restoration Specialist and traditional practitioner Bill Tripp describes the devastating emotional impacts of trying to

communicate Karuk perspective on fire and protect cultural resources in the face of Forest Service presence fighting the large fires of 2008.

In my situation I find myself quite a few times just to the point of asking why am I even here trying to do this? I should just go and be happy somewhere. On these fires, every two weeks you are dealing with new people, and you're going over the same things, and you are trying to re-justify every decision that was made where you were barely able to hold onto protection of one little piece of something. And then you're losing a piece of that cause new people came 14 days later. And then you're losing another piece of that and another. And you spend your whole time going over everything that you just went over again, and again, and again. And losing a little bit every time. And it causes some serious mental anguish. At the end of 2008 I quit the fire probably 3 or 4 weeks before I should have. Because it was like, "I am done, I can't do it anymore." I went home and I sat in my chair and I didn't do much of anything but sit and stare at the wall and eat and sleep for about a month. Before I could even get myself to come back to work.

Finally, there is an added dimension to all of the above because the loss of control in relation to cultural activities has a clear association with genocide for many people. Witnessing the denial of Karuk efforts to enact cultural management, the destruction of catastrophic fire, the actions of non-Native fire crews back burning through stands of acorn trees that have been culturally important for generations, or the disruption of Karuk ceremonies with helicopter noise are associated with genocide in several ways. On the one hand, experiences of fire and timber policy that are set according to non-Native values and philosophy are more generally associated with a long felt awareness of Karuk culture and life under attack. On the other hand, because denied access to management makes impossible the social and cultural practices described above, such actions are quite literally the present face of cultural genocide and forced assimilation. As Leaf Hillman describes, "Every project plan, every regulation, rule or policy that the United States Forest Service adopts and implements is an overt act of hostility against the Karuk People and represents a continuation of the genocidal practices and policies of the US government directed at the Karuk for the past 150 years. This is because every one of their acts – either by design or otherwise – has the effect of creating barriers between Karuks and their land."

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